

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.

REMARKS

Favorable reconsideration of the present application is respectfully requested.

The Official Action notes that the Preliminary Amendment filed July 16, 2001, was not entered because the amendment to Claim 8 was presented in the French language. Applicant believes that the Official Action intended to refer to the Preliminary Amendment dated March 16, 2001. Applicant submits that the Amendment that was presented in the French language was done because Claim 8 was originally presented in the French language, and Applicant was attempting to have the changes track the original specification.

The Supplemental Preliminary Amendment filed July 16, 2001, has been entered, and forms the basis for the Official Action and the objections and rejections contained therein. Since this Supplemental Preliminary Amendment makes the desired change in Claim 8, Applicant submits that it is no longer necessary to enter the Preliminary Amendment dated March 16, 2001.

Claims 1 and 3 have been initially rejected under 35 USC §112, second paragraph, as being indefinite. The use of the terms “adapted” and “for pyrotechnic applications” was objected to on the basis that the metes and bounds of the claims, and especially these limitations, was rendered unclear. Applicant has herein amended Claims 1 and 3 to omit these terms, and to more clearly and positively recite the limitations in the claims. In Claim 1, the wrapping is recited as being made of a material that will momentarily retard the propagation of heat to the wire core. Claim 3 now recites that the paper is a “pyrotechnic paper”. The metes and bounds of these

claims can now readily be determined, and withdrawal of the rejection of Claims 1 and 3 is respectfully requested.

Claims 1-7 and 15 have been rejected under 35 USC §103(a) as being obvious in view of the Nieman patent. To the extent that the changes made in Claims 1 and 3 are not deemed to aid in overcoming this rejection, the rejection is respectfully traversed.

The Nieman patent is said to disclose the use of either metal or paper strip to form a protective casing for a cored wire. It is further asserted that the disclosure of the use of either metal or paper would suggest to the person of ordinary skill in the art that metal and paper strip could be used interchangeably, and further that this would lead a person of ordinary skill in the art to envisage the use of a dual layer sheath or casing in which one layer is metal strip and the other layer is paper strip.

Applicant respectfully submits that the teachings of Nieman have been unreasonably extended in terms of what they would teach or suggest to a person of ordinary skill in the art. The Nieman patent, on the whole, is directed to providing a filled tubular article in which the fill material is of a relatively high density and a relatively uniform density. At the same time, Nieman focuses on providing a protective casing that is thinner than those used in the prior art, so that the casing, “will experience a relatively rapid rate of dissolution in the molten bath”. (Column 2, lines 7-8)

The Nieman patent further notes, in a discussion of the embodiment having a single helical wrapping forming the casing, that a metal foil strip is preferred, and that, alternatively, a strip of organic material, such as plastic or fibrous paper, may be substituted for the metal foil. Later in the disclosure, Nieman discusses

a further alternative embodiment in which two ribbon-like strips are wrapped around the core element. The use of a second strip is said to increase the strength of the casing and impart a reduced tendency to unwind, particularly upon the coiling of the finished product.

The only disclosure in Nieman of the function of the casing in feeding the wire into a melt is, as noted previously, that the casing is to be thin so as to rapidly dissolve in the molten bath. Nothing is disclosed or suggested in Nieman regarding the behavior of either a metal sheath or a combustible wrapping when used in combination in a cored wire. Only in the present application is there any disclosure that the behavior of the two materials may be different, and any disclosure as to the benefits that can be obtained by providing a construction having a metal sheath covered by a combustible material.

Applicant agrees that a person of ordinary skill in the art would envisage, in view of Nieman, using dual metallic ribbon strip layers and possibly dual ribbon layers of paper composition, as the casing for the product described in the alternative preferred embodiment (the one with two wrappings) therein. However, because Nieman is silent as to any beneficial or detrimental characteristics of using metal foil as compared to using a fibrous paper, the person of ordinary skill in the art would not envisage using a combination metal foil/paper casing. There is simply no disclosed or suggested benefit to doing this. Thus, even if a person skilled in the art contemplated such a construction, the first and most immediate consideration would be that the production process would be more complicated, in that two different materials would be required to be supplied to the wrapping devices. In the absence of any perceived advantages (none have been advanced by Nieman or by the Official

Action), this possible configuration would be discarded by the person skilled in the art.

Motivation for altering the prior art teachings must come from somewhere in the prior art. Here, no such motivation is seen to exist. The “reasonable expectation of obtaining a cored wire for introducing additives into a molten bath”, is found at the outset by following the unmodified teachings of Nieman, i.e., by using metal foil for the casing, or substituting plastic or fibrous paper therefor. There is no reasonable expectation of achieving any advantage (either in product performance or in production efficiency) to employing one metal foil wrapping and one paper wrapping, in light of the teachings of Nieman. Instead, there is an instant realization, even if the modification is contemplated, that the use of one metal foil wrapping and one paper wrapping will greatly complicate the production process.

The present invention goes far beyond the teachings of the Nieman patent, in which the casing is provided only for a degree of structural reinforcement, and with the goal of having the casing rapidly dissolve in the molten bath. The cored wire of Claim 1 has first a metal sheath containing the desired additive, and a combustible heat retarding wrapping around the sheath, which wrapping retards the propagation of heat to the wire core. There is no disclosure or suggestion of such a construction in Nieman.

Nieman, as noted previously, discusses providing a casing for structural support, but one which is thin so that it can rapidly dissolve in the molten bath. There in no way suggests, and in fact teaches away from, the claimed use of a heat retardant combustible wrapping which momentarily retards propagation of heat to the core, placed around a metallic sheath.

In the present invention, the heat retardant wrapping operates to initially delay heat propagation to the metallic sheath and core, so that the cored wire can maintain its initial form until it is well below the surface of the molten bath in which it is introduced. This avoids the noted problems experienced with some alloying elements or treatment agents which can be volatile or highly reactive if released from the cored wire at or near the surface of the molten bath. The Nieman patent does not even mention this as a problem, much less provide any sort of solution to the problem. Nieman is focused on getting the core element to the molten bath, at which point, the casing is to be rapidly dissolved. Such a construction will not achieve the desired result of having the cored wire remain substantially intact to a desired depth below the surface of the molten bath.

Claim 1 also specifies that the cored wire specifically has a metallic sheath on the wire core, and the heat resistant combustible wrapping around the metallic sheath. This specific construction enables the desired result to be achieved, namely, retaining the additives disposed in the wire core within the metal sheath until a certain depth (or even the bottom) of the molten bath is reached. Were the combustible wrapping first wrapped around the core materials, with the metal sheath disposed thereon, the combustible wrapping would not be able to retard the heat propagation to the sheath, and the core materials would be released at or near the surface of the molten bath. This further illustrates why Nieman does not render obvious the present invention. Even with the teachings stretched as far as is done in the rejection, Nieman still does not teach any specific advantage to employing first a metallic sheath, and then a heat resistant wrapping therearound.

Claim 1 is therefore not believed to be rendered obvious by the Nieman patent. Claims 2-7 and 15 depend from Claim 1 and recite additional

limitations which further distinguish the invention over the cited Nieman patent. For example, Claim 3, as amended, requires that the paper wrapping be a pyrotechnic paper. Pyrotechnic paper, as explained in the specification, is flame-resistant and has a high thermal resistance coefficient. Such a paper would not appear to be regarded as being a suitable paper for use in the Nieman patent, in that such paper would not likely be regarded as one which would rapidly dissolve, as is the sought-after characteristic in the Nieman construction.

As a further example, Claim 6 requires that the at least one layer of paper has a coating of varnish. Nieman neither discloses nor suggests the use of varnish in fixing the layer or layers.

Applicant thus believes that the rejection of Claims 1-7 as being obvious in view of Nieman is in error, particularly in view of the claim amendments made herein. Reconsideration and withdrawal of the rejection of these claims under 35 USC §103(a) is therefore respectfully requested.

Claims 9-15 have been rejected under 35 USC §103(a) as being obvious in view of Nieman and King et al. (U.S. 6,346,135). This rejection would presumably also apply to Claim 8, which contains the same basic limitation, but depends from Claim 2. To the extent that the changes made in Claims 1 and 3 herein are not regarded as overcoming this ground of rejection, the rejection is respectfully traversed.

Claims 8-15 set forth that a protective metal casing disposed on top of the combustible wrapping encloses the entire assembly. The rejection notes that the King patent discloses the use of a outer jacket which has a higher melting point than the core materials. This is said to lead to the effective introduction of the core materials (additives) into the molten bath. It is then asserted that it would have been

obvious to modify the structure of the Nieman to include such a metal casing disposed on top of the wrappings disclosed in Nieman, in order to result in effective introduction of additives to the molten metallic bath.

This combination can not reasonably be made, as it runs counter to the entire thrust of the teachings of Nieman. Nieman specifically states that the prior art casings suffer from the disadvantage that, “[B]ecause of the relatively poor dissolution or melting rate of the relatively thick prior art tubes, the rate of feeding them into the molten bath has necessarily been reduced in order to prevent the unmelted and excessively stiff remaining portions of the tubes from penetrating the sides of the casting mold’s downsprue.” (Column 1, lines 53-59) The solution presented by Nieman is to provide a much thinner casing that will, “experience a relatively rapid rate of dissolution in the molten bath”.

To now assert that it would have been obvious to cover the Nieman casing with a thicker casing that will not rapidly dissolve is to ignore the very teachings of Nieman. The hypothetical person of ordinary skill in the art is not allowed to ignore such teachings, and would not find the proposed modification to be obvious in any way, shape or form.

Withdrawal of the rejection of Claims 9-15 under 35 USC §103(a) in view of Nieman and King is therefore warranted, and is respectfully requested.

In view of the foregoing, Applicant believes that all of Claims 1-15, as amended, are allowable over the cited prior art, and are, in all other respects, in

condition for allowance. Reconsideration and withdrawal of all objections and rejections are respectfully requested. Passage of the application to issue at an early date is earnestly solicited.

Respectfully,

MILES & STOCKBRIDGE P.C.

By: 

John C. Kerins
Reg. No. 32,421

1751 Pinnacle Drive, Suite 500
McLean, Virginia 22102-3833
Telephone: (703) 610-8649
#9175164v1

Version With Markings to Show Changes Made

1 1. (Twice Amended) A cored wire for introducing additives into a
2 molten metal bath comprising a wire core (6) having a metallic sheath (5) thereon
3 containing an additive, and a wrapping (7) around said sheath, said wrapping (6)
4 being combustible without leaving harmful residues, said wrapping [adapted to] being
5 made of a material that will momentarily retard propagation of heat to the wire core
6 (6) when introduced into the molten metal bath.

1 3. (Twice Amended) The cored wire according to claim 2, wherein
2 paper (7A) is a pyrotechnic paper [for pyrotechnic applications].